

CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

What is claimed is:

1. (Currently Amended) A heat exchanger comprising:

a hot side passage for accommodating passage of a relatively hot fluid or gas therethrough, the hot side passage including a hot side inlet and outlet;

a cold side passage for ~~purpose of~~ accommodating passage of a relatively cold fluid or gas therethrough, the cold side passage including a cold side inlet and outlet, the hot and cold side passages being in contact with one another to permit heat transfer therebetween;

a thermal indicating means disposed within the heat exchanger and formed from a material designed to undergo permanent physical change when exposed to a predetermined temperature above a heat exchanger design operating temperature;

wherein the thermal indicating means is positioned proximate one of the hot side inlet and outlet or one of the cold side inlet and outlet.

2. (Canceled)

3. (Original) The heat exchanger as recited in claim 1 wherein the thermal indicating means is formed from materials selected from the group consisting of polymers, ceramics, composites cermets, metals, metal alloys, and mixtures thereof.

4. (Original) The heat exchanger as recited in claim 1 wherein the thermal indicating means is formed from one or more metals selected from the group consisting of Ag, Cu, Li, Zn, Pd, Ni, Sn, Mn, In, Dc, P, Al, and Au.

5. (Original) The heat exchanger as recited in claim 4 wherein the thermal indicating means is selected from a metal alloy comprising Ag, Cu, Zn and Pd..

6. (Currently Amended) The heat exchanger as recited in claim 1 ~~further comprising a hot side fluid or gas inlet connected to the hot side passage,~~ wherein the thermal indicating means is positioned proximate the hot side ~~fluid or gas inlet~~ or outlet.

7. (Currently Amended) The heat exchanger as recited in claim 1 ~~further comprising a cold side fluid or gas inlet connected to the cold side passage,~~ wherein the thermal

indicating means is positioned proximate the cold side ~~fluid or~~
~~gas inlet or outlet~~.

8. (Currently Amended) A method for determining whether a design temperature for a heat exchanger has been exceeded, the method comprising the steps of:

providing a heat exchanger for receiving a fluid or gas stream and including a hot side passage and a cold side passage, the hot and cold side passages each having respective hot side and cold side inlets and outlets;

providing a thermal indicator within the heat exchanger that is formed from a material having a predetermined melting temperature above the design temperature, the thermal indicator being positioned adjacent a hot side or cold side inlet or outlet;

exposing the heat exchanger to heat during operation;
and

visually inspecting the thermal indicator to determine if it has melted.

9. (Currently Amended) The method as recited in claim 8 wherein during the step of providing a heat exchanger, ~~the heat exchanger includes a hot side fluid or gas inlet, and wherein during the step of providing a thermal indicator, the thermal~~

indicator is positioned in ~~one of the hot or cold side fluid or gas inlet or outlet~~ such that it becomes exposed to a the fluid or gas stream ~~entering~~ passing through the heat exchanger hot side passage.

10. (Original) The method as recited in claim 8 wherein during the step of providing a thermal indicator, the material used to form the thermal indicator is formed from one or more metals selected from the group consisting of Ag, Cu, Li, Zn, Pd, Ni, Sn, Mn, In, Dc, P, Al, and Au.

11. (New) The heat exchanger as recited in claim 6 wherein the thermal indicating means is positioned adjacent the hot side inlet.

12. (New) The heat exchanger as recited in claim 7 wherein the thermal indicating means is positioned adjacent the cold side outlet.

13. (New) The heat exchanger as recited in claim 9 wherein the thermal indicator is positioned in the hot side inlet.

14. (New) The method as recited in claim 8 wherein during the step of providing a heat exchanger, the thermal indicator is positioned in the cold side inlet or outlet such that it becomes exposed to the fluid or gas stream passing through the heat exchanger cold side passage.

15. (New) The heat exchanger as recited in claim 14 wherein the thermal indicator is positioned in the cold side outlet.